

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:
**SEMICONDUCTOR ENERGY
LABORATORY CO., LTD.**

**398, Hase, Atsugi-shi,
Kanagawa
2430036
Japan**

Date of mailing
(day/month/year) **07.12.2004**

Applicant's or agent's file reference
00000PCT7465

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JP2004/016183

International filing date (day/month/year)
25.10.2004

Priority date (day/month/year)
28.10.2003

International Patent Classification (IPC) or both national classification and IPC
Int.Cl. H01L 29/786, H01L 21/336, H01L 21/768, H01L 21/288, H01L 21/3205, G02F 1/1368

Applicant
SEMICONDUCTOR ENERGY LABORATORY CO., LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Japan Patent Office

3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan

Authorized officer

Sonoko Miyazaki

Telephone No. +81-3-3581-1101 Ext. 3462

4M 3123

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Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>3-4, 7, 9, 11-14</u>	YES
	Claims	<u>1-2, 5-6, 8, 10</u>	NO
Inventive step (IS)	Claims	<u>12</u>	YES
	Claims	<u>1-11, 13-14</u>	NO
Industrial applicability (IA)	Claims	<u>1-14</u>	YES
	Claims		NO

2. Citations and explanations

- D1:JP 2003-98548 A(HITACHI, LTD.)
2003.04.03,whole document, Figs.1-7
D2:JP 2002-49333 A(SEMICONDUCTOR ENERGY LABORATORY CO., LTD.)
2002.02.15,whole document, Figs.1-21
D3:JP 2003-506886 A(PATTERNING TECHNOLOGY LIMITED)
2003.02.18,whole document, Figs.1-27
D4:WO 1997/043689 A1(SEIKO EPSON CORPORATION)
1997.11.20,page27-28, Figs.14-16
D5:JP 7-297404 A(KABUSHIKI KAISHA TOSHIBA)
1995.11.10,whole document, Figs.1-6
D6:JP 4-56168 A(STANLEY ELECTRIC CO., LTD.)
1992.02.24,whole document, Fig.1

[Claims 1-2,5-6,8,10]

The subject matter of claims 1-2,5-6,8,10 does not appear to be novel and to involve an inventive step with respect to the cited document D1.

The subject matter of claims 1-2,5-6,8,10 is disclosed in the cited document D1.

[Claims 3-4,7,9]

The subject matter of claims 3-4,7,9 does not appear to involve an inventive step in view of the cited documents D1- D2.

D2 discloses that a driver circuit is constructed by a second thin film transistor which comprises the same layer structure of a first thin film transistor and the driver circuit comprises only n-channel type thin film transistor.

[Claims 11]

The subject matter of claim 11 does not appear to involve an inventive step in view of the cited documents D1- D4.

D3-D4 disclose a mask is formed by a droplet discharge method.

[Claims 12]

The subject matter of claim 12 is neither disclosed in any of the documents cited in the ISR nor obvious to a person skilled in the art.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: **Box No. V**

[Claims 13]

The subject matter of claim 13 does not appear to involve an inventive step in view of the cited documents D1- D5.

D5 discloses the step of laminating a gate insulating layer, a semiconductor layer, and an insulating layer over the gate electrode is carried out without exposing to the atmosphere.

[Claims 14]

The subject matter of claim 14 does not appear to involve an inventive step in view of the cited documents D1- D6.

D6 discloses the gate insulating film is sequentially laminated by a first silicon nitride film, a silicon oxide film, and a second silicon nitride film.